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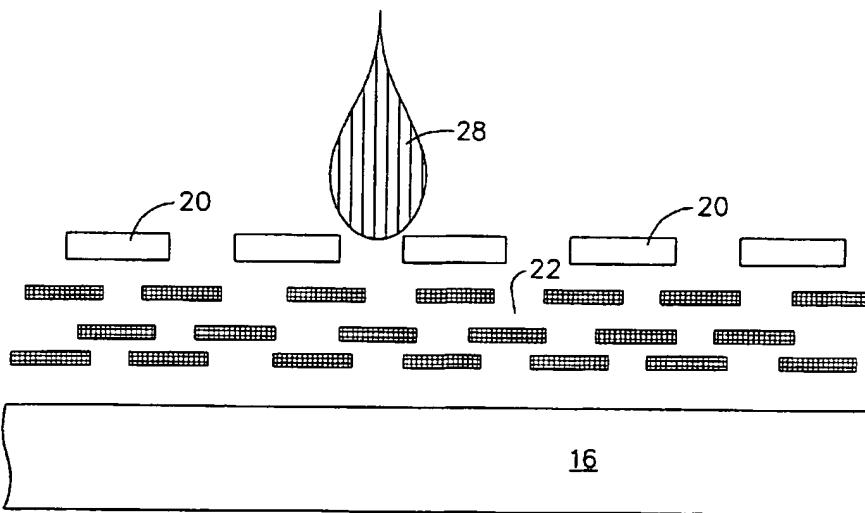
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(54) Title: COLOR MASKING COMPONENT FOR USE WITH FEMININE SANITARY PAD AND THE LIKE



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(57) Abstract: The present invention relates generally to products for absorbing bodily fluids, such as feminine sanitary pads, tampons, wound dressings, bandages, and the like. The absorbent personal article of the invention includes a color masking layer with fluid impermeable areas disposed on a fluid permeable support fabric in spaced relationship. The article may include an absorbent core, a top sheet, a backsheet, and a spreading layer in addition to or in combination with the color masking layer. The L values of the color masking layer and support fabric are preferably in the relationship of: - for black and dark colors, where L<sub>system</sub> is less than or equal to 35. For all colors, the L values of the color masking layer and support fabric are in the relationship of: - where L<sub>system</sub> >35. The absorbent article may include an array of fluid impermeable surfaces that cover up to 95% of a support fabric disposed atop the absorbent core of the article.



**Date of publication of the amended claims:** 23 October 2003

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**AMENDED CLAIMS**

[received by the International Bureau on 04 February 2003 (04.02.03);  
original claims 1-75 replaced by new claims 1-95 (9 pages)]

1. An absorbent personal article for bodily fluids comprising a color masking layer comprising a first fluid permeable support fabric and having a first color pattern thereon.
2. The article of claim 1 wherein the color masking layer is positioned as an outer surface of said article for exposure to a bodily fluid.
3. The article of claim 1 wherein the color pattern is a multicolored pattern.
4. The article of claim 3 wherein the multicolored pattern comprises at least two colors other than white.
5. The article of claim 1 wherein the color pattern covers at least 25% of the surface area of the support fabric and the L value of the color forming the pattern is greater than the L value of the adjacent support fabric.
6. The article of claim 1 wherein the L values of the color masking layer and support fabric are in the relationship of

$$\frac{\text{L}_{\text{system}} - \text{L}_{\text{cloth}}}{\text{L}_{\text{system}}} > 0.2$$

for all colors, where  $\text{L}_{\text{system}}$  is > 35.

7. The article of claim 1 further including a pattern of dark colors such that the L values of the color masking layer and support fabric are in the relationship of

$$\frac{\text{L}_{\text{system}} - \text{L}_{\text{cloth}}}{\text{L}_{\text{system}}} > -0.1$$

for dark colors, where  $\text{L}_{\text{system}}$  is less than or equal to 35.

8. The article of claim 1 wherein the color masking layer is not substantially stained as seen by the naked eye at a distance of approximately 1 foot or greater after bodily fluid has been deposited thereon.

9. The article of claim 1 wherein areas of the color masking layer having the color pattern are also substantially hydrophobic.

10. The article of claim 9 wherein said hydrophobic areas comprise at least one of the group consisting of irregularly shaped lines, irregular shapes, or irregularly shaped areas having a longest dimension of greater than about 0.1 mm.
11. The article of claim 1 wherein the color pattern comprises generally regular geometric shapes.
12. The article of claim 11 wherein the generally regular geometric shapes have an average diameter of in the range from 0.2 mm to 2.0 mm as measured in the plane of the support fabric, and the spacing between at least half of the regular geometric shapes is in the range of 0.1 mm to 2.0 mm as measured in the plane of the support fabric.
13. The article of claim 1 wherein the color masking layer further includes areas disposed on the fluid permeable support fabric in spaced relationship, wherein the areas comprise at least one of the group consisting of: optical interference films, holographic films, Moire' patterns, foils, highly reflective layers, and fluorescent materials pigments or dyes, or colors of the visible spectrum.
14. The article of claim 1 wherein the color masking layer further comprises an underlayer comprising a second fluid permeable support fabric and having a second color pattern thereon.
15. The article of claim 14 wherein the L value of the underlayer support fabric is 20% less than the L<sub>system</sub> value of the first color pattern and first fluid permeable support fabric.
16. The article of claim 1, comprising at least one article from the group consisting of: feminine sanitary napkin, tampon, pantyliner, sweat pad, wound dressings and bandages.
17. The article of claim 1 wherein the color masking layer further comprises an apertured sheet overlaying said first permeable support sheet and said first color pattern.

18. The article of claim 17 wherein the apertured sheet has an L value greater than 60 and is positioned as an outer surface of said article for exposure to a bodily fluid.
19. The article of claim 17 wherein the apertured sheet is a non-white color.
20. An article of claim 17 wherein at least one of said overlying apertured sheet and said color masking layer are removable from the remainder of said article.
21. An article as recited in claim 1, wherein at least a portion of said color masking layer is removable from the remainder of said article.
22. The article of claim 1 wherein said first color pattern includes a plurality of substantially opaque areas.
23. The article of claim 22 wherein the fluid permeable support is substantially transparent.
24. The article of claim 22 wherein the fluid permeable support is substantially translucent.
25. The article of claim 2 further including a pad structure positioned below the color masking layer and adapted to absorb and retain bodily fluids within said pad structure.
26. The article of claim 25, wherein the pad structure further comprises a non-white colored spreading layer disposed between the color masking layer and the pad structure.
27. The article of claim 25 wherein the pad structure further comprises a spreading layer including a color pattern disposed thereon.
28. The article of claim 1 wherein the contrast ( $\Delta E$ ) between an unstained region of said color masking layer and a region of color masking layer stained with bodily fluid is less than 50 and the value of L<sub>system</sub> is greater than 35.
29. The article of claim 28 wherein the contrast ( $\Delta E$ ) is less than 20.
30. The article of claim 28 wherein the contrast ( $\Delta E$ ) is less than 12.

31. The article of claim 28 wherein the contrast ( $\Delta E$ ) is less than 4.
32. The article of claim 28 wherein the contrast ( $\Delta E$ ) is less than 2.
33. The article of claim 28 wherein the contrast ( $\Delta E$ ) is less than 1.
34. The article of claim 1 further including a pattern of dark colors and wherein the contrast ( $\Delta E$ ) between an unstained region of said color masking layer and a region of color masking layer stained with bodily fluid is less than 50 and the value of L<sub>system</sub> is less than 35.
35. The article of claim 34 wherein the contrast ( $\Delta E$ ) is less than 20. The article of claim 109 wherein the contrast ( $\Delta E$ ) is less than 20.
36. The article of claim 34 wherein the contrast ( $\Delta E$ ) is less than 12.
37. The article of claim 34 wherein the contrast ( $\Delta E$ ) is less than 4.
38. The article of claim 34 wherein the contrast ( $\Delta E$ ) is less than 2.
39. The article of claim 34 wherein the contrast ( $\Delta E$ ) is less than 1.
40. The article of claim 1 wherein the color masking layer further includes fluid impermeable areas disposed on the fluid permeable support fabric in spaced relationship, wherein at least a portion of the color pattern is visible on the fluid impermeable areas.
41. The article of claim 40 wherein said fluid permeable areas are perforated.
42. The article of claim 40 wherein the fluid impermeable areas include a plurality of colors.
43. The article of claim 40 wherein the position of the fluid impermeable areas forms a pattern.
44. The article of claim 43 wherein the fluid impermeable areas are arranged in patterns according to the physical dimensions of the fluid impermeable areas.

45. The article of claim 40 wherein the outer surface of at least a portion of the fluid impermeable areas include a hydrophobic material.
46. The article of claim 45 wherein the hydrophobic material comprises at least one material from the group consisting of: polyolefins, polymeric fluorocarbons, polymeric fluorosilicones, silicones, polyvinyl halides and nylons or mixtures thereof.
47. The article of claim 45 wherein at least a portion of the hydrophobic material included a fluid impermeable area is further coated by a second hydrophobic material.
48. The article of claim 45 wherein at least a portion of the fluid permeable support fabric is substantially coated with hydrophilic material.
49. The article of claim 40 wherein the fluid impermeable areas extend upward from the support fabric to form a shape that promotes the flow into the article of a bodily fluid in contact therewith.
50. The article of claim 40 wherein the fluid impermeable areas extend upward from the support fabric and are shaped to reduce the surface area of the support fabric for contact with a user.
51. The article of claim 40 wherein the largest cross-sectional dimension of said fluid impermeable areas in the plane of the support fabric is greater than at least 0.1 mm.
52. The article of claim 40 wherein said fluid impermeable areas cover up to 95% of the material of said support fabric when viewed at an angle perpendicular to the support fabric.
53. The article of claim 40 wherein said fluid impermeable areas cover up to 80% of the material of said support fabric when viewed at an angle perpendicular to the support fabric.
54. The article of claim 40 wherein said fluid impermeable areas cover up to 50% of the material of said support fabric when viewed at an angle perpendicular to the support fabric.

55. The article of claim 40 wherein the support fabric comprises a plurality of support fabrics in layered relationship having at least one impermeable area thereon.
56. The article of claim 40 wherein said fluid impermeable areas comprise generally regular geometric shapes having an average diameter in the range from 0.2 mm to 2.0 mm as measured in the plane of the support fabric.
57. The article of claim 56 where the spacing between at least half of said fluid impermeable areas is in the range of 0.1 mm to 2.0 mm as measured in the plane of the support fabric.
58. The article of claim 40 wherein the color masking layer further includes an underlayer comprising a second fluid permeable support fabric and having a second color pattern thereon.
59. The article of claim 58 wherein the underlayer includes a plurality of fluid impermeable areas disposed on the second fluid permeable support fabric in spaced relationship.
60. The article of claim 40 wherein the contrast ( $\Delta E$ ) between an unstained region of said color masking layer and a region of color masking layer stained with bodily fluid is less than 20 and the value of L<sub>system</sub> is greater than 35.
61. The article of claim 60 wherein the contrast ( $\Delta E$ ) is less than 12.
62. The article of claim 60 wherein the contrast ( $\Delta E$ ) is less than 4.
63. The article of claim 60 wherein the contrast ( $\Delta E$ ) is less than 2.
64. The article of claim 60 wherein the contrast ( $\Delta E$ ) is less than 1.
65. The article of claim 40 further including a pattern of dark colors and wherein the contrast ( $\Delta E$ ) between an unstained region of said color masking layer and a region of color masking layer stained with bodily fluid is less than 20 and the value of L<sub>system</sub> is less than 35.
66. The article of claim 65 wherein the contrast ( $\Delta E$ ) is less than 12.

67. The article of claim 65 wherein the contrast ( $\Delta E$ ) is less than 4.
68. The article of claim 65 wherein the contrast ( $\Delta E$ ) is less than 2.
69. The article of claim 65 wherein the contrast ( $\Delta E$ ) is less than 1.
70. An absorbent personal article having a fluid permeable color masking layer positioned as an outer surface of said article for exposure to a bodily fluid, and the color masking layer comprises substantially one color wherein the contrast ( $\Delta E$ ) between an unstained region of said color masking layer and a region of color masking layer stained with bodily fluid is less than 50 and the value of L value of the color masking layer greater than 30.
71. The article of claim 70 wherein the contrast ( $\Delta E$ ) is less than 20.
72. The article of claim 70 wherein the contrast ( $\Delta E$ ) is less than 12.
73. The article of claim 70 wherein the contrast ( $\Delta E$ ) is less than 4.
74. The article of claim 70 wherein the contrast ( $\Delta E$ ) is less than 2.
75. The article of claim 70 wherein the contrast ( $\Delta E$ ) is less than 1.
76. The article of claim 70 wherein the color masking layer has an L value greater than 60.
77. The article of claim 70 wherein the color masking layer further includes an apertured sheet positioned between the fluid permeable surface and the user having an L value greater than 60.
78. The article of claim 77 wherein the apertured sheet has a  $\Delta E$  less than 10 between an unstained region of said color masking layer and a region of color masking layer stained with bodily fluid.
79. An absorbent personal article having a fluid permeable color masking layer positioned as an outer surface of said article for exposure to a bodily fluid, wherein the color masking layer is substantially one color and further comprises a plurality of areas including fluid impermeable material separated by fluid permeable spaces.

80. The article of claim 79 wherein the L value of the color masking layer and the L value of the fluid permeable spaces are in the relationship of:

$$\frac{L_{\text{system}} - L_{\text{permeable spaces}}}{L_{\text{system}}} > 0.2$$

for all colors, where  
 $L_{\text{system}} > 35$

81. The article of claim 79 wherein the fluid impermeable material comprises less than 95% of the surface of the color masking layer, and said areas are interconnected to adjacent ones of said areas.

82. The article of claim 81 wherein the fluid impermeable material comprises less than 80% of the surface of the color masking layer.

83. The article of claim 79 wherein at least the outer surfaces of the fluid impermeable areas are substantially hydrophobic and the fluid permeable support fabric is substantially hydrophilic.

84. The article of claim 79 wherein the fluid impermeable areas extend upward from the support fabric to form a shape that promotes the flow into the article of a bodily fluid in contact therewith.

85. The article of claim 79 wherein the fluid impermeable areas extend upward from the support fabric and are shaped to reduce the surface area of the support fabric in contact with a user.

86. The article of claim 79 wherein both the fluid impermeable areas and fluid permeable areas are both substantially white in color, the fluid impermeable areas have an L value greater than 60 and are substantially hydrophobic, the fluid permeable areas have an L value of substantially 20% or more less than that of the impermeable areas and are substantially hydrophilic, such that the color masking layer is not substantially stained as seen by the naked eye after bodily fluid has been deposited thereon.

87. The article of claim 86 wherein the fluid impermeable areas comprise generally regular geometric shapes having an average diameter in the range from 0.2 mm to 2.0 mm as measured in the plane of the support fabric.
88. The article of claim 87 wherein the spacing between at least half of said fluid impermeable areas is in the range of 0.3 mm to 2.0 mm as measured in the plane of the support fabric.
89. The article of claim 79 wherein the contrast ( $\Delta E$ ) between an unstained region of said color masking layer and a region of color masking layer stained with bodily fluid is less than 50 and the value of L value of the color masking layer greater than 30.
90. The article of claim 89 wherein the contrast ( $\Delta E$ ) is less than 20.
91. The article of claim 89 wherein the contrast ( $\Delta E$ ) is less than 12.
92. The article of claim 89 wherein the contrast ( $\Delta E$ ) is less than 4.
93. The article of claim 89 wherein the contrast ( $\Delta E$ ) is less than 2.
94. The article of claim 89 wherein the contrast ( $\Delta E$ ) is less than 1.
95. The article of claim 79 wherein the fluid permeable spaces are perforated.